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ICAO-Based Needs Assessment in Thailand's Aviation Industry: A Basis for Designing a Blended Learning Program

Dondon Parohinog, Chaithat Meesri

Aviation Personnel Development Institute, Kasem Bundit University, Thailand

Abstract

The need to implement a program to maximize student potential at Kasem Bundit University – Romklao Campus led to the adaptation by the researchers of Horn and Staker's (2011) Blended Learning Approach (BLA) for English language development. A needs assessment study aimed at improving aviation students' English language skills was supplemented with qualitative and quantitative data through interviews, survey questionnaire and focus groups. Quantitative data was collected, by administering a survey questionnaire to investigate aviation students' opinions in regards to language descriptions set by ICAO namely: pronunciation, vocabulary, grammar, fluency, comprehension, and interaction.

The survey yielded findings that support the need for a Blended Learning Program. The results of the focus groups and interviews further confirmed that there is a need for higher proficiency in English language. The future employees indicated that their skills in English need further improvement before they can pursue a career in aviation. Thus, a Blended Learning Model is deemed necessary.

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1. Introduction

Aviation remains the most dynamic industry worldwide. It facilitates global trade and tourism as well. Continued growth in terms of aircraft production and establishment of low cost airlines are very evident. The Network ASEAN Forum (2013) stated in its paper "Aviation Lifting the Barriers Roundtables", that the industry projects in Asia-Pacific alone the need for 185,000 more pilots, and 243,500 maintenance personnel over the next 20 years. This demand poses a great pressure on training centres and Higher Educational Institutions (HEIs) with aviation programs in Thailand. However, since Suksiripakonchai (2010) claimed that there are no language training

Dondon Parohinog, Chaithat Meesri. Tel. +66 02-904-2200 ext. 2237 email: dondon.par@kbu.ac.th chaithat.mee@kbu.ac.th

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courses for the ICAO language proficiency purposes, it is highly likely that Thailand's standards are below par of those set by ICAO.

On the other hand, in his article "Misunderstandings in ATC Communication," Barshi and Farris (2013) pointed out that communication breakdown is not caused by speech rate nor poor English language proficiency, but instead by lengthy messages. Despite the claims, ICAO insists that in previous accidents, it was found that the common contributing element was insufficient English language proficiency on the part of flight crew or controllers (ICAO Manual, 2010, 1.2.1).

To address these dilemmas, ICAO identified six areas of language competency in which aviation personnel must be proficient including the following: pronunciation, structure, vocabulary, fluency, comprehension, and interactions (ICAO Manual, 2004, 2.8.1).

Though English has been a part of curriculum in schools, colleges and universities throughout Thailand, aviation employees and students alike still manifest a lack of proficiency in some areas of English language. Overall perception of low English proficiency is supported by Thailand's poor rating in international English tests (ETS, 2009 as cited in Baker, 2012). Pawapatcharaudom (2007) concluded that Thai students have most difficulty in writing, followed by listening and reading among other skills. Wiriyachitra (2001) found the reason behind these difficulties, stating that English curriculum in Thai universities could not meet the demand of English in the workplace because its focus is not on listening and speaking—the skills most used in the workplace.

Therefore, assessing the opinion of aviation industry stakeholders is a prime initiative to bridge the gap between the current skills and the skills required in the workplaces. This needs assessment study is aimed at identifying the opinion of aviation students in terms of ICAO-Based Skills, the current technology-enhanced methods of learning, and the aviation-related topics that most interested them.

1.1 Research objectives

This study aims to determine the proficiency of aviation students based on the six language descriptions set by ICAO: pronunciation, structure, vocabulary, fluency, comprehension and interaction.

Specifically, it seeks to accomplish the following:

1. Investigate the opinion of aviation students concerning:
    a. Content
    b. Types of online tools
    c. Skills
2. Design a sample Blended Learning Model based on the needs of students in aviation programs.

1.2 Research questions

1. How do aviation students assess themselves based on ICAO language proficiency skills?
2. What topics in aviation do the students want to learn?
3. What online tools do aviation students find helpful?

2. Methodology

This study employed a mixed-method of qualitative and quantitative research. It explored the opinion of aviation industry stakeholders in terms of the language descriptions indicated in ICAO Language Proficiency Requirements. The participants included 621 students from six universities which offer aviation programs. The majority (51 percent) were enrolled in airline business, while the rest were enrolled in courses such as commercial pilot, airport management, air cargo management, and air traffic control. The participants were selected through

convenience sampling which depended on students' availability to answer the survey questionnaire or to join interview sessions.

Moreover, this study utilized two instruments in data gathering. The instruments includes a survey questionnaire and interview questions. Items in the questionnaire were based on the descriptions of ICAO Language Proficiency Requirements (ICAO Manual 2010). To determine the internal consistency of the questionnaire, it was pilot tested, which revealed a 0.893 Cronbach's Alpha. And to further ascertain the validity of the results, each item was back-translated. Originally, items were written in English and then translated to Thai for better understanding, thus yielding more valid answers. After this step, the items in Thai were translated back into English for comparison. The results of the back-translated items indicated very close content to the original items.

The results of the survey questionnaire were analysed using a formula for determining the mean (μ) and standard deviation (*sd*).

3. Results and Discussion

This section of the paper presents the results in two parts: the quantitative data yielded by the survey-questionnaire and the qualitative data yielded by the focus-group and individual interviews. These are presented in the following tables:

3.1 Survey Results

Table 1. Summary of aviation students' opinion of their skills based on ICAO Language Proficiency Requirements.

Skill	Mean	SD
Pronunciation	3.46	1.09
Vocabulary	3.26	1.05
Structure	3.12	.98
Fluency	3.53	1.09
Comprehension	3.31	0.97
Interaction	3.25	0.99

Table 1 shows the summarized results of the survey conducted. Among the six ICAO language proficiency requirement skills and based on the computed mean, aviation students believed that they encountered more difficulties in structure or grammar, be it spoken or written. Grammar difficulties include verb tenses, the use of prepositions, adjectives in series, and sentence structures. Furthermore, their interaction skills indicated that students found it difficult to start a conversation in English. Another factor hindering aviation students from communicating effectively is their vocabulary, as evidenced by the mean 3.26. Besides structure, students also encountered difficulties in interaction. When faced with English speakers, students seldom confirm or clarify what they heard. Their attitudes towards using English in communication and their rapport with the other person also affected their interaction.

Equally important to the first two skills mentioned is fluency. Students had problems in morphology and lexis, including the use of prefixes and suffixes. Likewise, the use of words with different meanings also affected them.

Table 2. Ranking of subjects/topics that the participants are most interested to learn.

Subjects/Topics	Rank
Airport	2
Airline and Aircrew	1
Aircraft	3
ATC	5
Aviation authority	4

The second research question yielded the following results. Aviation students ranked five of the given topics which interested them the most. Since most of the participants in this research were enrolled in a service-oriented industry, they were inclined to study more about airline and aircrew, thus ranking it number 1. Secondly, the participants ascertained that it is better to learn more about their target workplace after obtaining their degrees in their respective fields; thus, they chose airport as the second most significant topic to learn about.

The other topics such as aircraft, air traffic control and aviation authority were ranked third, fourth and fifth respectively.

Table 3. Online tools perceived by the participants as helpful in language learning.

Synchronous	Asynchronous
Audio-video conferencing	Streaming audio-video
Chat	Narrated slideshows
Instant messaging	Document libraries
Web conferencing	Databases
	Website links

Table 3 presents aviation students' opinion about specific online tools that might aid them in their pursuit of improving their language skills based on ICAO Language Proficiency Requirements.

Online tools are divided into two categories: synchronous and asynchronous. These online communication tools can allow learners create a full, rich learning experience
(Ashley, 2003). Synchronous online tools allow teachers and learners to convene at the same time but in different places while asynchronous online tools gives the learners to learn on their own pace, abilities, time and place.

The survey results indicated that aviation students considered audio-video conferencing, chat, instant messaging and web conferencing as possible online tools that could be used as alternative methods to face-to-face instruction. Furthermore, streaming audio-video, narrated slideshows, document libraries, databases and website links were also considered as helpful by the participants.

3.2 Interview Results

Now, the results of the interview and the focus group revealed that students encountered difficulties in these aspects of language:

1) *Pronunciation* such as phonology. Sound production of words with /r/ and /l/ sounds, /sh/ and /ch/ among others tend to be most common difficulty aviation students encountered. Others mentioned their difficulties in intonation, stress, accent and fluency or the rate of speech.
2) In terms of *vocabulary*, the 3.26 mean is low and is supported by their difficulties about morphology. Lexis also emerged as one of the troubles encountered by aviation students in terms of vocabulary. Some mentioned that they want to learn more about words with multiple meanings, as well as words in British

and American English. Their knowledge on the use of affixes affected their vocabulary, including collocations and word family.

3) The results on *structure,* with a mean of 3.12, show the lowest among the skills. During one of the series of interviews conducted, the participants were asked about their difficulties in structure. Most common errors were in tenses, sentence patterns, voices, and parts of speech.
4) The difficulties in *fluency* include the constant use of fillers like uhm, ahhh. The participants did not use discourse markers in their conversations. When asked if they could talk about varied topics, the participants said that it all depends on their familiarity with the topics.
5) *Comprehension* refers to spoken language in aviation. The main obstacle to comprehension for the participants is the accent. For them, accent causes delayed interaction and sometimes confusion.
6) Finally, *interaction* poses a great difficulty among the participants because of their attitude. As mentioned previously, the participants lack confidence to start a conversation. For aviation students, interaction could mean talking about different topics which may not be familiar to them, thus, leading to fewer exchanges.

4. Conclusion

Based on the results of survey and interviews, it can be concluded that aviation students encountered various difficulties in the six areas of ICAO Language Proficiency Requirements. The survey and interview results revealed that most participants have difficulties in grammar or structure, followed by interaction. These two areas received the lowest means. Likewise, the lack of morphological and lexical knowledge prevented students from interacting to other people.

Among the five significant topics related to aviation industry, the participants agreed to have airline and aircrew as the first topic that they wanted to study further. This is followed by their interests in learning about airports, aircraft, aviation authority, and air traffic control respectively.

Finally, the participants suggested a set of online tools that might help them improve their skills on ICAO Language Proficiency Requirements areas. These online tools can be categorized as synchronous and asynchronous. Online tools such as audio-video conferencing, instant messaging, streaming audio and video, and narrated slideshows among others emerged as the helpful for the participants.

5. Recommendation

1) Needs Assessment on this topic with data triangulation from major stakeholders in aviation industry.
2) Use of this data by course/program managers to develop trainings and courses.
3) IT professionals and language teachers' collaborations to create programs and applications.

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